

CLAIMS

1. A light emitting element comprising:
  - a first electrode and a second electrode;
  - a first layer and a second layer each containing an organic material and an inorganic material;
  - a third layer containing a light emitting material; and
  - a fourth layer generating electrons,  
wherein the first layer is in contact with the first electrode,  
the second layer is in contact with the second electrode,  
the third layer is provided between the first electrode and the second electrode  
with the first layer and the second layer respectively therebetween, and  
the fourth layer is provided between the third layer and the second layer.
2. A light emitting element according to claim 1, wherein the organic material is a hole transporting material.
3. A light emitting element according to claim 1, wherein the inorganic material is a metal oxide.
4. A light emitting element according to claim 3, wherein the metal oxide is one selected from the group consisting of molybdenum oxide, zinc oxide, indium oxide, tin oxide, antimony oxide, and tungsten oxide, or two or more metal oxides selected therefrom.

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5. A light emitting element according to claim 1, wherein the inorganic material is one selected from indium nitride, tin nitride, antimony nitride, and molybdenum nitride, a tungsten nitride; or two or more inorganic materials selected therefrom.

5 6. A light emitting element according to claim 1, the thickness of each of the first layer and the second layer is 30nm to 1  $\mu$ m.

7. A light emitting element according to claim 1, wherein the thickness of the second layer is 50 % to 150 % of the thickness of the first layer, and the thickness of the 10 first layer is 50 % to 150 % of the thickness of the second layer.

8. A light emitting element according to claim 1, wherein t voltage is applied so as to make the light emitting element emit light, the electrode applied with higher potential is the first electrode, and the electrode applied with lower potential is the second electrode.

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9. A light emitting element comprising:  
a first electrode and a second electrode;  
a first layer and a second layer each generating holes;  
a third layer containing a light emitting material; and  
20 a fourth layer generating electrons,  
wherein the first layer is in contact with the first electrode,  
the second layer is in contact with the second electrode,  
the third layer is provided between the first electrode and the second electrode  
with the first layer and the second layer respectively therebetween, and  
25 the fourth layer is provided between the third layer and the second layer.

10. A light emitting element according to claim 9, the thickness of each of the first layer and the second layer is 30nm to 1  $\mu$ m.

5           11. A light emitting element according to claim 9, wherein the thickness of the second layer is 50 % to 150 % of the thickness of the first layer, and the thickness of the first layer is 50 % to 150 % of the thickness of the second layer.

12. A light emitting element according to claim 9, wherein t voltage is applied so  
10 as to make the light emitting element emit light, the electrode applied with higher potential  
is the first electrode, and the electrode applied with lower potential is the second electrode.

13. A light emitting element comprising:  
15           a first electrode and a second electrode;  
           a first layer and a second layer each containing a P-type semiconductor;  
           a third layer containing a light emitting material; and  
           a fourth layer containing an N-type semiconductor,  
           wherein the first layer is in contact with the first electrode,  
           the second layer is in contact with the second electrode,  
20           the third layer is provided between the first electrode and the second electrode  
           with the first layer and the second layer respectively therebetween, and  
           the fourth layer is provided between the third layer and the second layer.

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14. A light emitting element according to claim 13, wherein the P-type semiconductor is a metal oxide.

15. A light emitting element according to claim 13, wherein the P-type 5 semiconductor is one or more compounds selected from the group consisting of vanadium oxide, molybdenum oxide, cobalt oxide, and nickel oxide.

16. A light emitting element according to claim 13, wherein the N-type semiconductor is a metal oxide.

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17. A light emitting element according to claim 13, wherein the N-type semiconductor is one or more compounds selected from the group consisting of zinc oxide, zinc sulfide, zinc selenide, and titanium oxide.

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18. A light emitting element according to claim 13, the thickness of each of the first layer and the second layer is 30nm to 1  $\mu$ m.

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19. A light emitting element according to claim 13, wherein the thickness of the second layer is 50 % to 150 % of the thickness of the first layer, and the thickness of the first layer is 50 % to 150 % of the thickness of the second layer.

20. A light emitting element according to claim 13, wherein t voltage is applied so as to make the light emitting element emit light, the electrode applied with higher potential is the first electrode, and the electrode applied with lower potential is the second electrode.

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## 21. A light emitting element comprising:

a first electrode and a second electrode;

a first layer and a second layer each containing a first organic compound and a material which accepts electrons of the first organic compound;

5 a third layer containing a light emitting material; and

a fourth layer containing a second organic compound and a material which donates electrons to the second organic compound,

wherein the first layer is in contact with the first electrode,

the second layer is in contact with the second electrode,

10 the third layer is provided between the first electrode and the second electrode with the first layer and the second layer respectively therebetween, and

the fourth layer is provided between the third layer and the second layer.

## 22. A light emitting element according to claim 21, wherein the first organic

15 compound is a hole transporting organic compound.

23. A light emitting element according to claim 21, wherein the material which accepts electrons is a metal oxide.

20 24 A light emitting element according to claim 23, wherein the metal oxide is molybdenum oxide or vanadium oxide.

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25. A light emitting element according to claim 21, wherein the second organic compound is an electron transporting organic compound.

26. A light emitting element according to claim 21, wherein the material which 5 donates electrons is an alkali-metal, an alkaline-earth metal, or a rare material

27. A light emitting element according to claim 21, wherein the difference between the molar ratio of the material which accepts electrons to the first organic compound in the second layer and the molar ratio of the material which accepts electrons 10 to the first organic compound in the first layer is

in the range of 80 % of the molar ratio of the material which accepts electrons to the first organic compound in the second layer,

in the range of 80 % of the molar ratio of the material which accepts electrons to the first organic compound in the first layer,

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28. A light emitting element according to claim 27, wherein the difference between the molar ratio of the material which accepts electrons to the first organic compound in the second layer and the molar ratio of the material which accepts electrons to the first organic compound in the first layer is preferably in the range of 40 % of the 20 molar ratio of the material which accepts electrons to the first organic compound in the second layer, and

in the range of 40 % of the molar ratio of the first organic compound in the first layer.

29. A light emitting element according to claim 21, the thickness of each of the first layer and the second layer is 30nm to 1  $\mu$ m.

30. A light emitting element according to claim 21, wherein the thickness of the 5 second layer is 50 % to 150 % of the thickness of the first layer, and the thickness of the first layer is 50 % to 150 % of the thickness of the second layer.

31. A light emitting element according to claim 21, wherein a voltage is applied so as to make the light emitting element emit light, the electrode applied with higher potential 10 is the first electrode, and the electrode applied with lower potential is the second electrode.